John F. Hughes
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1. EDUCATION

Ph.D., Mathematics, University of California, Berkeley, 1982

Dissertation topic: "*Invariants of Bordism and Regular Homotopy of Low-dimensional Immersions.*"

Advisor: Robion C. Kirby

M.A., Mathematics, University of California, Berkeley, 1982

B.A., Mathematics, Princeton University, 1977

2. PROFESSIONAL APPOINTMENTS

1998-	Associate Professor of Computer Science, Brown University
1994-1998	Assistant Professor of Computer Science, Brown University
1991-1993	Associate Professor (Research) of Computer Science and Mathematics, Brown University
1989-1991	Visiting Assistant Professor of Mathematics and Computer Science, Brown University
1984-1988	Tamarkin Assistant Professor of Mathematics, Brown University
1982-1984	Assistant Professor of Mathematics, Bryn Mawr College

Consultancies

2005-2006	Kenyon and Kenyon, NY
1992-1994	CoSA, Providence, RI
1985-86, 1988	Bay Resource Corporation, Cambridge, MA
1985	Kamine Engineering, Bayshore, NJ
1985	Stellar Computer, Newton, MA
1984	Boston Consulting Group, Boston, MA

3. RESEARCH IN PROGRESS

Sketching free-form surfaces: Research in computer vision has identified methods for extracting geometry from images, under various conditions (e.g., carefully-aligned stereo camera, with known lighting, and no shiny objects). Research in graphics, by contrast, has shows how to create images from geometry; these images are not always photorealistic, however – often they seek to provide compact or simple representations of the geometric objects. Finally, work in the study of human perception tells us what characteristics of the world most strongly affect our perception of it (sharp edges are more salient than soft ones, for instance). These perceptual understandings naturally influence approaches to non-photorealistic rendering. One of my main current interests is in reversing all of these: taking sketches drawn by users, and inferring 3D shape from them, particularly free-form shapes like animal forms, lumps of clay, mountains, and other natural phenomena. And while vision techniques often take photographic imagery and form intermediate representations or high-level ones, the challenge here is to form models from *sketched* figures instead. Implicit in this work is the inference of topology from line-drawings, the estimation of smooth shapes from topological contour descriptions, and the development of appropriate forms of interaction to let a user modify an inferred shape (perhaps after seeing the inferred shape from a new point of view).

Algorithmic aesthetics for curve drawing: with colleagues at Princeton, I am working on extracting the geometric properties that characterize curves drawn by Disney animators, which we deem to be "smooth and organic", so that curves drawn by an ordinary user can be adjusted to become more like these.

Fundamentals of rendering: I am re-examining the fundamental ideas used in developing rendering algorithms for creating pixel-based representations of images; it appears that fundamental ideas of sampling and aliasing were mis-applied in the seminal papers, and that such topics as antialiasing, mip-mapping, and compositing may all need to be re-examined in light of this.

Machine learning for graphics: There's a wealth of opportunity to find new applications of machine-learning in graphics. Until now, it's been largely applied in texture- and motion-synthesis, with a few failed attempts to apply it to user-interfaces. The algorithmic aesthetics project described above depends on learning style from curves, but I believe that there are more interesting things to learn in the high-dimensional spaces associated with games and control (e.g., one could learn a mapping from user-situation to user-action in a game, thus making the AI-based characters better able to defeat the user).

Nonphotorealistic rendering: Recent work from Rutgers and Princeton shows that the traditional "important features" for line drawings – the contours – may be only an approximation to what's really interesting. "Suggestive contours" have been proposed as an alternative, and they indeed look interesting in many cases. But the number of situations in which they

4. PUBLICATIONS

Books

1. *Proceedings, Eurographics Workshop on Sketch-Based Interfaces and Modeling*, J. Jorge and J. Hughes, eds., EG Workshop Proceedings, ISBN 3-905673-16-9, 2004.
2. *Computer Graphics: Principles and Practice in C* (with A. van Dam, J. Foley, and S. Feiner), Addison-Wesley (1995).
3. *Introduction to Computer Graphics* (with A. van Dam, J. Foley, S. Feiner, and R. Phillips), Addison-Wesley (1994) (also in Spanish, Polish, Chinese, and French).
4. *Computer Graphics: Principles and Practice* (with A. van Dam, J. Foley, and S. Feiner), Addison- Wesley (1990) (also in German and Japanese).

Journal Articles

5. "Optical Splitting Trees for High-Precision Monocular Imaging" (with M. McGuire, W. Matusik, H. Pfister, S. Nayar, B. Chen), accepted for publication in *IEEE Computer Graphics and Applications,* to appear 2007.
6. "A sketch-based interface for fashion design" (with Emmanuel Turquin1, Jamie Wither, Laurence Boissieux, and Marie-Paule Cani), *IEEE Computer Graphics and Applications*, (accepted to appear in a special issue on sketching, 2007).
7. "SmoothSketch: 3D Free-Form Shapes from Complex Sketches," (with Olga Karpenko), Proceedings of ACM SIGGRAPH 2006, *ACM Transactions on Graphics*, 25 (3), 2006, 589-598.
8. "Defocus Video Matting." (with Morgan McGuire, Wojciech Matusik, Hanspeter Pfister, and Frédo Durand), Proceedings of ACM SIGGRAPH 2005, *ACM Transactions on Graphics,* 24 (3), 567-576.
9. "As-Rigid-As-Possible Shape Manipulation," (with Takeo Igarashi and Tomer Moscovich), Proceedings of ACM SIGGRAPH 2005, *ACM Transactions on Graphics*, 24 (3), 1134-1141.
10. "WYSIWYG NPR: Drawing Strokes Directly on 3D Models" (with Robert D. Kalnins, Lee Markosian, Barbara J. Meier, Michael A. Kowalski, Joseph C. Lee, Philip L. Davidson, Matthew Webb, Adam Finkelstein), Proceedings of ACM SIGGRAPH 2002, *ACM Transactions on Graphics* , 21 (3), 755-762.
11. "Efficiently Building a Matrix to Rotate One Vector to Another" (with Tomas Möller), *Journal of Graphics Tools,* 4(4), 1999, 1-4.
12. "Building an Orthonormal Basis from a Unit Vector" (with Tomas Möller), *Journal of Graphics Tools,* 4(4), 1999, 33-36.
13. "Bordism and Regular Homotopy of Low-Dimensional Immersions," *Pacific Journal of Mathematics,* 156(1), 1992, 155-184.
14. "On the Number of Multiplicative Partitions" (with J. Shallit), *American Mathematical Monthly,* 90(7), 1983.
15. "Immersions of Surfaces in 3-Manifolds" (with J. Hass), *Topology,* 24(1), 1985, 97-112.

16. "Another Proof that Every Eversion of the Sphere has a Quadruple Point," *American Journal of Mathematics*, 1985, 501 - 505.
17. "The Smale Invariant of a Knot" (with P. Melvin), *Comm. Math. Helv.*, 60, 1985.
18. "Triple Points of Immersed 2*n*-Manifolds in 3*n*-Space," *Oxford Q.J.M.* (2), 34, 1983.

Peer-Reviewed Conference Articles (SIGGRAPH before 2002)

1. "Art-Based Rendering of Fur, Grass, and Trees" (with Michael A. Kowalski, Lee Markosian, J. D. Northrup, Lubomir Bourdev, Ronen Barzel, and Loring S. Holden) , *Proceedings of SIGGRAPH 99*, Computer Graphics Proceedings, Annual Conference Series, 433-438.
2. "Skin: A Constructive Approach to Modeling Free-form Shapes" (with Lee Markosian, Jonathan M. Cohen, and Thomas Crulli), Proceedings of SIGGRAPH 99, *Computer Graphics Proceedings, Annual Conference Series*, 393-400.
3. "Multiperspective Panoramas for Cel Animation" (with D. Wood, A. Finkelstein, C. Thayer, and D. Salesin), *Computer Graphics Proceedings, Annual Conference Series*, 1997, ACM SIGGRAPH, New York, 1997, 243 - 250.
4. "Real-Time Nonphotorealistic Rendering" (with L. Markosian, M. Kowalski, S. Trychin, L. Bourdev, and D. Goldstein), *Computer Graphics Proceedings, Annual Conference Series*, 1997, ACM SIGGRAPH, New York, 1997, 415 - 420.
5. "Orientable Textures for Image-Based Pen-and-Ink Illustration" (with M. Salisbury, M. Wong, and D. Salesin), *Computer Graphics Proceedings, Annual Conference Series*, 1997, ACM SIGGRAPH, New York, 1997, 401 – 406.
6. "SKETCH: An Interface for Sketching 3D Scenes" (with R. Zeleznik and K. Herndon), *Computer Graphics Proceedings, Annual Conference Series*, 1996, ACM SIGGRAPH, New York, 1996, 163- 170.
7. "Modeling Surfaces of Arbitrary Topology" (with Cindy Grimm), *Computer Graphics Proceedings, Annual Conference Series*, 1995, ACM SIGGRAPH, New York, 1995, 359 - 368.
8. "Autocalibration for Virtual Environment Tracking Hardware" (with S. Gottschalk), *Computer Graphics Proceedings, Annual Conference Series*, 1993, ACM SIGGRAPH, New York, 1993, 65 - 72.
9. "An Interactive Toolkit for Constructing 3D Widgets" (with R. Zeleznik, K. Herndon, D. Robbins, N. Huang, T. Meyer, and N. Parker), *Computer Graphics Proceedings, Annual Conference Series*, 1993, ACM SIGGRAPH, New York, 1993, 81 - 84.
10. "Direct Manipulation of Free-Form Deformations" (with W. Hsu), *Computer Graphics*, 26(4), *SIGGRAPH Proceedings*, August 1992, 177-184.
11. "Scheduled Fourier Volume Morphing," *Computer Graphics*, 26(4), *SIGGRAPH Proceedings*, August, 1992, 43 - 46.
12. "Smooth Interpolation of Orientations with Angular Velocity Constraints Using Quaternions" (with A. Barr, B. Currin and S. Gabriel), *Computer Graphics*, 26(4), *SIGGRAPH Proceedings*, August, 1992, 313 - 320.
13. "An Object-Oriented Framework for the Integration of Interactive Animation Techniques" (with R. Zeleznik, D. Conner, M. Wloka, D. Aliaga, N. Huang, P. Hubbard, B. Knep, H. Kaufman and A. van Dam), *Computer Graphics*,25(4), *SIGGRAPH Proceedings*, July, 1991, 101 - 112.
14. "Sculpting: An Interactive Volumetric Modeling Technique" (with T. Galyean), *Computer Graphics*, 25(4), *SIGGRAPH Proceedings*, July, 1991, 267-274.
15. "Constructive Solid Geometry for Polyhedral Objects" (with D. Laidlaw and W. Trumbore), *Computer Graphics*, 20(4), *SIGGRAPH Proceedings*, August, 1986, 161-170.

Other Peer Reviewed Conference Articles

1. "Multi-finger Cursor Techniques," (with Tomer Moscovich), in *Graphics Interface Proceedings 2006*, Stephen Mann and Carl Gutwin (Editors), AK Peters, Boston, 2006, 1-7.
2. "Spatial Keyframing for Performance-driven Animation" (with Takeo Igarashi and Tomer Moscovich), *2005 ACM SIGGRAPH/Eurographics Symposium on Computer Animation*, 2005, 107-115.
3. "Sketching garments for virtual characters" (with M-P Cani and Emmanuel Turquin), in *Eurographics Workshop on Sketch-Based Interfaces and Modeling*, J. Jorge and J. Hughes, eds., August, 2004.
4. "Epipolar Methods for Multi-view sketching" (with Olga Karpenko and Ramesh Raskar), in *Eurographics Workshop on Sketch-Based Interfaces and Modeling*, J. Jorge and J. Hughes, eds., August, 2004.

5. Hardware Determined Edge Features. *Proceedings of the Non-Photorealistic Animation and Rendering 2004 (NPAR '04),* Annecy, France, June 7-9, 2004, 135-147.
6. "Parameterizing n-holed Tori Using Hyperbolic Geometry," with Cindy Grimm, 10th IMA Conference on the Mathematics of Surfaces, University of Leeds, UK; *Lecture Notes in Computer Science*, Volume 2768/2003, *"Mathematics of Surfaces"*, Springer Berlin/Heidelberg, 2003.
7. "Clothing Manipulation," (with Takeo Igarashi) *15th Annual Symposium on User Interface Software and Technology, ACM UIST'02*, Paris, France, October 27-30, 2002, 91-100. (Best Paper)
8. "Programming Languages for Compressing Graphics," (with Morgan McGuire, and Shriram Krishnamurthi), *Lecture Notes in Computer Science*, Springer-Verlag Heidelberg, ISSN:0302-9743, Volume 2305 / 2002, 68-82.
9. "Free-form Sketching with Variational Implicit Surfaces" (with O. Karpenko, R. Raskar), *Proceedings of Computer Graphics Forum.* 21 (3), 2002, 585-594.
10. "A Suggestive Interface for 3D Drawing," (with Takeo Igarashi) *14th Annual Symposium on User Interface Software and Technology, ACM UIST'01,* Orlando, Florida, November 11-14, 2001, 173-181.
11. "Voice as Sound: Using Non-verbal Voice Input for Interactive Control," (with Takeo Igarashi) *14th Annual Symposium on User Interface Software and Technology,* ACM UIST'01, Orlando, Florida, November 11-14, 2001, 155-156.
12. "User-Guided Composition Effects For Art-Based Rendering," (with Michael A. Kowalski, Cynthia Beth Rubin, Jun Ohya), *2001 ACM Symposium on Interactive 3D Graphics*, 2001, 99-102.
13. "Harold: A World Made of Drawings," (with Jonathan Cohen, and Robert Zeleznik, *Proceedings of NPAR 2000,* 2000, 83-89.
14. "Art-Based Rendering with Continuous Levels of Detail," (with Lee Markosian, Barbara Meier, Michael Kowalski, Loring Holden, and J.D. Northrup), *Proceedings of NPAR 2000*, 2000, 59-65.
15. "An Interface for Sketching 3D curves" (with Jonathan Cohen, Lee Markosian, Robert Zeleznik, and Ronen Barzel), *Proceedings of the 1999 Symposium on Interactive 3D Graphics*, April 26 - 29, 1999, Atlanta, 17 - 21.
16. "Rapid Approximate Silhouette Rendering of Implicit Surfaces" (with D. Bremer), *Proc. of Implicit Surfaces '98*, a Eurographics/ACM SIGGRAPH workshop, held at Univ. of Washington, Seattle, 1998, 155-164.
17. "Collision Detection in Aspect and Scale Bounded Polyhedra" (with S. Suri and P. M. Hubbard), *Proc. 9th ACM-SIAM Annual Symp. on Discrete Algorithms* (SODA 98).
18. "Developing an Interactive Illustration: Using Java and the Web to Make it All Worthwhile" (with J. Beall and A. Doppelt), 1996; in *The Internet in 3D: Information, Images, and Interactio*n," R. Earnshaw and J. Vince, eds., Academic Press, London, 1997, 55-63.
19. "Plausible Motion Simulation for Computer Animation" (with R. Barzel and D. Wood), in *Computer Animation and Simulation '96*, R. Boulic and G. Hegron, eds., Springer, New York, 1996, 183-195.
20. "Visual Interfaces for Solids Modeling" (with C. Grimm, D. Pugmire, M. Bloomenthal and E. Cohen), UIST 95, *Proceedings of the 1995 UIST*, November, 1995.
21. "Smooth Isosurface Approximation" (with Cindy Grimm) in *Eurographics Workshop on Implicit Surfaces*, Brian Wyvill and Marie-Paule Gascuel, eds., April, 1995, 57-77.
22. "Nonpolygonal Isosurface Rendering for Large Volume Datasets" (with James W. Durkin), *IEEE Visualization'94 Conference*, Tysons Corner, Virginia, 1994.
23. "An Annotation System for 3D Fluid Flow Visualization" (with Maria M. Loughlin), *IEEE Visualization '94 Conference*, Tysons Corner, Virginia, 1994.
24. "Volume Warping" (with T. True), *Proceedings*, Visualization '92, 1992.

Other

1. "Implementation Details of SmoothSketch: 3D Free-Form Shapes from Complex Sketches," (with Olga Karpenko), sketch as SIGGRAPH 2006..
2. "Inferring 3D Free-Form Shapes from Contour Drawings" (with Olga Karpenko), sketch at SIGGRAPH 2005.

3. “A Configurable, Single-Axis, Multi-Parameter Lens Camera,” (with Morgan McGuire, Wojciech Matusik, Hanspeter Pfister, Frédo Durand, and Shree Nayar, Poster at Symposium on Computational Photography and Video, May 2005.
4. “Fast, practical and robust shadows,” (with Morgan McGuire, Kevin Egan, Mark Kilgard, and Cass Everitt); Brown Univ. tech report, and posted on the nVidia website for developers.

Book Reviews

1. “Oriented Projective Geometry: A Framework for Geometric Computation, by Jorge Stolfi,” *SIAM Review*, 35(2), May, June 1993, 321-323.

Invited Lectures

2004	“*Expressive Rendering: A look ahead,” at* Cartoon Future, Future of the 3D in the Animation Industry, La Coruña, Spain, April 2004.
	“*Polyhedral topology and geometry rediscovered*”, Max-Planck Institute, Saarbruecken, and ETH Zurich, June, 2004.
2003	*“What can Computer Science Do For Archaeology (and vice versa)?*, at ARCHAEOS project final meeting, INRIA Sophia-Antipolis, December, 2003.
2001	*Art, Perception, and Computer Graphics*, in two Distinguished Lecture Series at Princeton and Univ. of Wisconsin
2000	*Probability and Computer Graphics*, Colloquium, iMAGIS, Grenoble.
1999	*Whither Implicit Surfaces?* ACM/Eurographics Conference Implicit Surfaces 99. Keynote Talk.
1998	*How Can Computational Geometry Matter To Computer Graphics?*, 3rd CGC Workshop On Computational Geometry. Invited Talk.
1996	*User Interfaces for Steady Flow Visualization*, Institute for Computer Applications in Science and Engineering, NASA Langley Research, VA
	Effective Interactive Illustrations, University of Washington, Colloquium; invited talk at Microsoft.
	Sketching: Past, Present, and Future. Purdue University, Colloquium; Univ. of Southern California, Seminar; Stanford University, Graphics Seminar; Stanford University, HCI class; University of California, Berkeley, invited talk in Animation Class; Interval Research Colloquium.
	How Can Hybrid Systems Serve Computer Graphics: A User’s View, 2nd Annual Hybrid Systems Conference, Ithaca, NY. Invited talk.
1995	*Smoothing Singular Subdivision Surfaces*, University of Washington
	Frontiers of Visualization, Keynote address in workshop on visualization, at Conference on Visualization Technology to Find and Develop More Oil and Gas, sponsored by American Association of Petroleum Geologists.
	The Limitations of Generality: Lessons for VRML from the Graphics and Visualization Center, VRML 95, The First Annual Symposium on the Virtual Reality Modeling Language.
1994	*Three Problems at the Mathematics/Graphics Interface*, Cornell University
1993	*Computer Graphics and Scientific Visualization*, Brown University Early Identification Program (for underrepresented groups in academia)
	Graphics Without Polygons, SUNY Stonybrook, Columbia University, Brown University.
1992	*Randomness in Computer Simulations of Rigid Bodies*, Holy Cross College, Worcester, MA.
	Computer Graphics in Mathematics Education, Panel at SIGGRAPH ’92.
	Using Math to Make Things Move, or Why You Can’t Juggle on a Windy Day, CS Departmental Undergraduate Group, Brown University.
	Benefits and Pitfalls of Scientific Visualization, RI Chapter of Sigma Xi.

1991	*The Mathematics of 3D Computer-Based Sculpting*, Mathematics Association of America, NE Regional Meeting.
1989	*Polyhedral Models, Polynomial Models, and Fourier Analysis*, American Mathematical Society, Chairman's Conference, Washington, DC.
1988	*Polynomial Models for Smooth Immersions*, New York ACM SIGGRAPH
1986	*Software for Teaching Mathematics*, NERCOM.
1985	*Multiple points of immersions and the squares-in-circles theorem*, Bryn Mawr College, Drexel University.

Images

1. M. McGuire and J. Hughes, "Robot" and "Teapot," Proceedings of NPAR 2004, back cover.
2. Michael A. Kowalski, Lee Markosian, J. D. Northrup, Lubomir Bourdev, Ronen Barzel, and Loring S. Holden, "Truffula Scene," *Computer Graphics* Proceedings, Annual Conference Series, 1999, ACM SIGGRAPH, New York, 1999, front cover.
3. M. Salisbury, M. Wong, J. Hughes and D. Salesin, "Books," *Computer Graphics* Proceedings, Annual Conference Series, 1997, ACM SIGGRAPH, New York, 1997, front cover.
4. T. Galyean and J. Hughes, "Sculpted Thinker and Tree," *SuperASCII Magazine*, 2(10), October, 1991.
5. "Center Stage of Polynomial Sphere Eversion," *Science News*, 135(19), May, 1989, cover image. A second image is the header for an article by Ivars Peterson about work done (independently) by Bernard Morin and J. Hughes.

5. SERVICE

To the University

2004	Co-director of Industrial Partners Program in CS
	Dept. Development of new service course in Matlab (CS004-2)
	Programming Comprehensive Exam Committee
2005-2006	Chair of graphics subcommittee for faculty search
1984-2004	Primary advisor for Mathematics/Computer Science concentration.
1992-2003	Primary advisor for Applied Mathematics/Computer Science concentration
2002-2003	Chair, David Laidlaw's tenure review
1998-2003	Departmental Representative for Graduate Affairs
1998-1999	Organizer of Symposium in honor of Andy van Dam's 60th birthday
1997	Organized 20th IPP Symposium for C.S. Department
1995-1997	Committee to Oversee the Brown Special Studies Office
1993-1997	Committee on Prizes and Premiums
1994	Committee on Evaluating the Brown Learning Community
1992-1994	Advisor to Computer Science ACM Student Chapter
1993-	Resource Faculty for Mellon Minority Fellows Program
1993	Sponsor of Summer Intern, Brown EIP program

To the Profession

1982-	Reviewing for *ACM Transactions on Graphics, IEEE Computer Graphics and Applications, InfoSciences, SIGGRAPH,* and *Computer Vision, Graphics and Image Processing.*
2005-2006	Program Committee, 2006 ACM SIGGRAPH Symposium on Interactive 3D Graphics & Games;

	Program Committee, NPAR 2006.
	Evaluation committee for INRIA on international collaboration programs.
2004-2005	Papers Committee Member, 2005 ACM SIGGRAPH Symposium on Interactive 3D Graphics & Games.
	Papers Committee Member, SIGGRAPH '05, Los Angeles, CA.
	Papers Advisory Board, SIGGRAPH '05.
	Program Committee, Eurographics Workshop on Sketch-based Modeling and Interfaces, August 2005, Dublin, Ireland
	Program Committee, 2005 ACM SIGGRAPH Symposium on Interactive 3D Graphics & Games
1995-2005	Associate Editor, Journal of Graphics Tools
2004	Review of teaching structures/practice at ENSIMAG, a university in Grenoble, France affiliated with INRIA.
	Co-organizer of Eurographics Workshop on Sketch-based Modeling and Interfaces, August 2004, Grenoble, France.
2000-2002	Papers chair for SIGGRAPH '02, San Antonio, TX
2000-2001	Program Committee, SIGGRAPH '01, Los Angeles, CA
	Program Committee, NPAR 2000, Annecy France
	Papers co-chair for the ACM 2001 Symposium on Interactive 3D Graphics
1999-2000	Program Committee, SIGGRAPH '00, New Orleans, LA
1998-1999	Co-chair, Implicit Surfaces '99, joint ACM/Eurographics conference in Bordeaux, France.
	Program Committee, Symposium on Interactive 3D Graphics, Atlanta, GA.
	Program Committee, 1st Annual Conference on Non-Photorealistic Animation and Rendering, Annecy, France
1998	Program Committee, ACM/SIGGRAPH Symposium on Interactive 3D Graphics (I3D)
1997-1998	Reviewing, Graphics Interface '98.
	Program Committee, Implicit Surfaces '98, Seattle, WA.
1997-1998	Program Committee, SIGGRAPH '98, Orlando, FL (August)
1997	Program Committee, SIGGRAPH '97, Los Angeles, CA (August)
1993-1997	Associate Editor, *ACM Transa*ctions on Graphics
1995	Program Committee, SIGGRAPH '95, Los Angeles, California (July)
1994	Program Committee, SIGGRAPH '94, Orlando, Florida (July)
1993	Program Committee, SIGGRAPH '93, Anaheim, California (August)
1993	Reviewing for OOPSLA '93

6. ACADEMIC HONORS, PATENTS, AND HONORARY SOCIETIES

Patents

2005	Applied for patent on Defocus Video Matting work with MERL; patent still pending

2002 "Free-Form Modeling of Objects with Variational Implicit Surfaces", (with Olga Karpenko and Ramesh Raskar of MERL) (allowed June 2, 2004, granted Tuesday September 21, 2004, patent number 6,795,069)

Awards

2002 UIST Best Paper Award

Societies

Currently or former member of the Association for Computing Machinery, ACM SIGGRAPH, Canadian Computer-Human Communications Society, IEEE. Previously elected to Sigma Xi.

7. TEACHING (SINCE 1994)

2005-2006	Integrated Introduction to Computer Science (CS017)
	Interactive Computer Graphics (CS224)
	Introduction to Scientific Computing and Problem Solving in Matlab (CS004-2) [Overload]
2004-2005	Integrated Introduction to Computer Science (CS017)
	Interactive Computer Graphics (CS224)
2002-2003	Integrated Introduction to Computer Science (CS017)
	Interactive Computer Graphics (CS224)
2001-2002	Integrated Introduction to Computer Science (CS017)
	Integrated Introduction to Computer Science (CS018)
	Interactive Computer Graphics (CS224) [Overload]
2000-2001	Integrated Introduction to Computer Science (CS017)
	Integrated Introduction to Computer Science (CS017)
	Interactive Computer Graphics (CS224) [Overload]
1999-2000	Interactive Computer Graphics (CS224)
	Integrated Introduction to Computer Science (CS018)
1998-1999	Discrete Mathematics (CS022)
	Interactive Computer Graphics (CS224)
1997	Discrete Mathematics (CS022)
	Interactive Computer Graphics (CS224)
	SIGGRAPH Review Seminar (CS295-1) [Overload]
1995-1996	Advanced Topics in Graphics (CS295X)
1994-1995	Interactive Computer Graphics (CS224)
	Software Engineering (CS032)
	Independent Study and UTRA with Samuel Trychin on *Simulation of Highly Viscous Fluid Flow for Animation*

Theses Directed

2006-2007 Tomer Moscovich, *Principles and Applications of Multi-touch Interaction,* Ph.D. defense scheduled for 15 December 2006; Olga Karpenko, *Algorithms and Interfaces for Sketch-Based 3D Modeling,*Ph.D. defense expected January 2007.

2005	Andrea Fein, Sc.M., Disney Curves, Morgan McGuire, Ph.D., *Computational Videography with a Single Axis, Multi-Parameter Lens Camera* (dissertation defense August 2005, degree May 2006).
2004	Emmanuel Turquin, DEA (like U.S. M.Sc. degree), *Sketching garments for virtual characters,* co-advised with Marie-Paule Cani of INRIA, Grenoble.
2002	Steven Dollins, Ph.D., *Modeling for the Plausible Emulation of Large Worlds*
2000-2001	Andrew Reiff, Sc.M.
1999-2000	Lee Markosian, Ph.D., *Art-Based Modeling and Rendering for Computer Graphics.* J. Ho, Sc.M.
1998-1999	D. Guo, M. Kowalski, J. Stewart, J. White, D. Bhuphaibool, C. Dahloff – Sc.M.s granted
1997-1998	Z. Atanassova, D. Bremer, M. Ayers, L. Bourdev – Sc.M.s granted.
1996-1997	J. Beall, B. Chin, C. Luo, K. Drew, P. Lewis – Sc.M.s granted.
1996	Cindy Grimm, Ph.D., *Modeling Surfaces of Arbitrary Topology and Continuity*
1994	Philip Hubbard, Ph.D., *Collision Detection for Interactive Graphics Applications*
1993-1994	5 Sc.M. students (M. Laughlin, M. Corkum, H. Mamaysky, N. Thatte-Potter, M. Stevens)
1984-1992	5 Sc.M. theses (T. Galyean, P. Granger, W. Hsu, T. True, J. Durkin)

Thesis Committees

2006-	Song Zhang (Brown University), Daniel Keefe (Brown University), Leon Sigal (Brown University), Stefan Roth (Brown University), Daniel Acevedo-Feliz (Brown University), Frank Wood (Brown University),
2006	Pascal Barla (Ph.D., INPG, Grenoble, France)
2005	Joseph LaViola (Brown University)
2004	David Johnson (Univ. of Utah), Jean Combaz (INRIA Grenoble)
2004	DEA (like US M.Sc. degree) reader for Emmanuel Turquin, Thomas Schneider, and Mathieu Coquerelle, INRIA, Grenoble, France, 2004. Jean Combaz, Ph.D., INRIA, Grenoble, France, 2004.
2000	Dongbai Guo (Brown Engineering)
1998	T.M. Murali (Duke/Brown)
1995	James Arvo, Yale University (outside examiner)
1989	Anne Verroust, Universite d'Orsay (outside examiner)

8. DATE OF PREPARATION OF THIS CV

11 December 2006